

ABSTRACT OF THE DISCLOSURE

The present invention is aimed at providing a wavefront dividing type optical integrator which can yield a uniform illuminance distribution substantially over the whole illumination field formed thereby even when the size of each micro lens constituting the optical integrator is made smaller so as to set a large number of wavefront divisions. The optical integrator in accordance with the present invention is a wavefront dividing type optical integrator, having a number of micro lenses arranged two-dimensionally, for forming a number of light sources by dividing a wavefront of an incident beam; each micro lens having a rectangular entrance surface and a rectangular exit surface, and satisfying at least one of the following conditions:

$$(d_1/2)(D_1/2)/(\lambda \cdot f) \geq 3.05$$

$$(d_2/2)(D_2/2)/(\lambda \cdot f) \geq 3.05$$

where  $f$  is the focal length of each micro lens,  $d_1$  is the length of one side of the entrance surface of each micro lens,  $d_2$  is the length of the other side of the entrance surface of each micro lens,  $D_1$  is the length of the side of exit surface in each micro lens corresponding to the one side of entrance surface,  $D_2$  is the length of the side of exit surface in each micro lens corresponding to the other side of entrance surface, and  $\lambda$  is the wavelength of the incident beam.